



EVALUATION OF THE DIRECT ECONOMIC IMPACT OF DECREASING PRICES OF HONEY ON THE MAIN HONEY EXPORT COUNTRIES OF THE AMERICAS

The greatest damage to beekeepers in human history.

Prepared by the Apimondia Regional Commission of the Americas
and the Apimondia Scientific Commission of Beekeeping Economy.

Introduction

Any variation of honey prices in the international market has a direct effect on the beekeeping sector since honey prices directly power the activity in countries with a significant participation in the international market, and indirectly in countries with a lower participation. As clearly described in the APIMONDIA Statement on Honey Fraud (Apimondia, 2020), the preservation of honey quality and purity becomes absolutely essential for the sustainability of the honey chain whose foundation begins with beekeepers.

The American continent shows quite different realities in terms of participation in the international honey market. On the one hand, there is a group of important honey exporting countries, such as Argentina, Mexico, Brazil, Chile, Cuba, Uruguay, etc. On the other hand, we have a group of importing countries, some with small volumes in order to balance their domestic consumption and others such as the world's largest importer of honey, the United States of America, which demands about 30% of the product that is marketed worldwide. Canada, a major global exporter of honey is also an importer of significant quantities with a developed domestic market.

In the world's biggest honey market, the U.S., the problem of honey fraud has involved circumvention through third countries in which a false country of origin was designed to avoid the high antidumping duties which prevail in the U.S. As in the case of many commodities which are tinged with fraud, the prices of such products are always well below what a normal market would demand. The pernicious consequences of adulteration of honey derive from the fact that modern modes of adulteration create a situation in which there are no limits to the quantities nor floors to the prices of adulterated honey.

The problem of adulteration involves both the export of adulterated honey and the export of the methods for adulterating honey. This underlies the collapse of honey prices and threatens beekeepers with an existential crisis.

During the last APIMONDIA International Congress in Montreal, Canada, major concerns of different members of the beekeeping sector were related to falling prices of honey and the prevalence of adulteration in the international honey market.

The international phenomenon of the adulteration of honey in this modern era has resulted in the largest economic losses that have been suffered by the beekeepers of the world, including in the Americas, in human history. Furthermore, this adulteration has put in jeopardy hundreds of billions of dollars of annual agricultural production, threatening global food security and global ecological sustainability. In order to have an idea of the magnitude of the importance of bees on agricultural production, Karasinski (2018) demonstrated that the economic value of pollination services that bees provide in Australia is about 140 times greater than the value of honey.

Based on that concern, we decided to start this collaborative work between the Regional Commission of the Americas and the Scientific Commission on Beekeeping Economy of APIMONDIA. An exhaustive economic assessment of all the effects caused by adulteration on the different beekeeping industries of the Americas is a quite a complex task which requires the collaboration of different types of experts. For instance, in countries that do not produce enough honey to meet local demand, the importation of cheap and low-quality honeys slows down the development of new beekeeping operations and the potential growth and professionalization of existing ones. Unfair and unsustainable prices do not generate the necessary incentives to produce.

The objective of this work is to focus on the estimation of the direct economic loss suffered by the honey exporting countries of the Americas due to the fall of the international prices of the product, which has a direct impact on beekeepers and the entire beekeeping sector, but also on public incomes since governments do not receive at least part of the corresponding taxes for the exported honey.

Trade data used in this report were sourced from International Trade Centre (ITC) – UNCOMTRADE – Argentine Chamber of Exporters (CERA)'s High Performance Platform.

Similar studies of the economic losses throughout the international community of beekeepers should also commence. Demonstrating and illustrating the economic losses created in a marketplace by several modes of adulteration show gains to a few and strategic harm to the many.

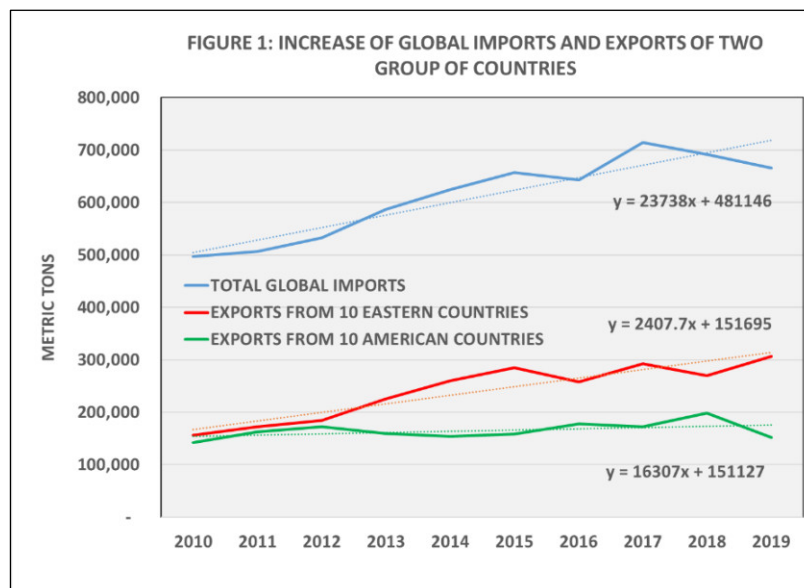
Offer and Demand

Global demand for honey has been steadily growing in recent years. Over the past ten years, global honey imports increased by approximately 34%, from 497,270 tonnes in 2010 to 665,306 tonnes in 2019 (Figure 1). It should be noted, however, that this growth may be somewhat overestimated because some countries have been recently incentivized to import honey and then re-export it as locally produced (García, 2018). This overestimation could reflect “Honeygate”, the action of the U.S. judicial system which uncovered fraudulent country of origin designations, during which there was transshipment of Chinese honey through about 30 different countries.

During the last ten years, the main ten honey exporting countries in the Americas (Argentina, Brazil, Canada, Mexico, Chile, Uruguay, Cuba, El Salvador, Guatemala and Nicaragua) have increased their exports by only 6.5 %, at an average increase rate of 2,407 tonnes per year. This differs from and is interrelated to the startling increases in exports from the ten major honey exporting countries in the Eastern Hemisphere (China, India, Ukraine, Vietnam, Thailand, Turkey, Pakistan, the Russian Federation, Taiwan and Myanmar), which increased their total honey exports a 95.8 % during the last ten years at a rate of increase of 16,307 tonnes per year (Figure 1).

Honey production is more inelastic than other agricultural productions, and does not grow rapidly even under a significant increase of the demand. In contrast, the production of adulterated honey is very elastic, sophisticated, pernicious and economically rewarding. The increase in the number of hives, through the generation of new beekeepers or the growth of existing operations, is a time-consuming process. In addition, more hives do not necessarily mean more honey under the current agro-ecological conditions of constant increase of land dedicated to agriculture. Increasing amounts of land are being dedicated to crops such as soybeans, replacing more desirable clover and wildflower fields. The growing use of agrochemicals affects biodiversity and also the life of bees, making it increasingly difficult and costly to maintain bee colonies alive and productive. Colony Collapse Disorder is in some way a denomination to these types of problems for the bees.

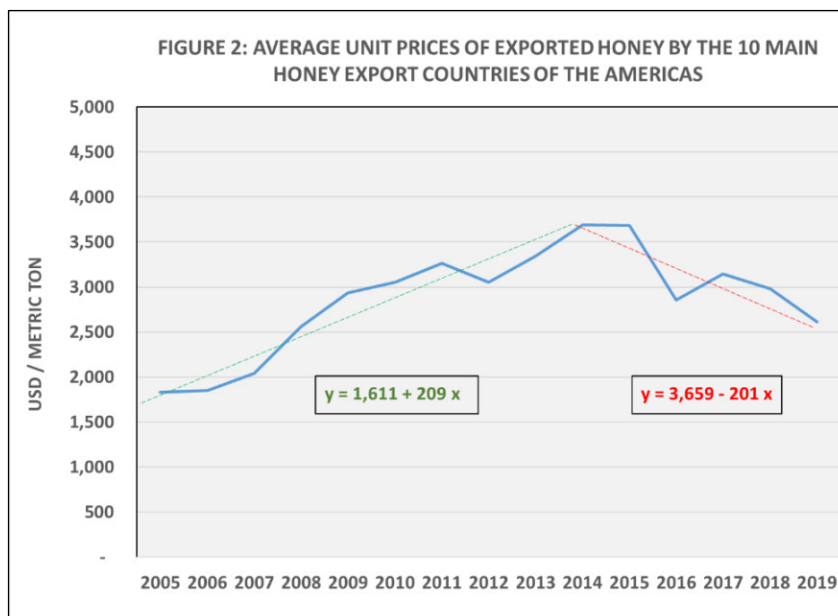
In a context of increasing difficulties for honey production, the growth of the ten major honey exporting countries in the Eastern Hemisphere looks very astonishing. Have at least some of these Eastern countries discovered new techniques for producing honey, or some new way of evading quality controls? We are sure that whatever the answer, beekeepers from the Eastern hemisphere are not primarily responsible for the phenomenon but, in many cases, also victims of an unscrupulous system.



Data source: ITC - UNCOMTRADE

The evolution of honey prices

A sustained increase of prices would be the logical and expectable result in a market showing increasing demand and quite inelastic ability to increase supply. When we observe the evolution of export honey prices of the major exporting countries of the Americas over the past years, we can see a clear increasing trend of the average price of honey during the period 2005 - 2014 (Figure 2).



Data source: ITC - UNCOMTRADE

The price grew at an average rate of USD 209/tonne/year (from USD 1,611 per tonne in 2005 to USD 3,659 per tonne in 2014), a 127% increase. Clearly the price increase observed between 2005 and 2014 can be explained by an increase in global demand for honey and a supply also growing, but at a much slower pace. The international honey price in 2014-2015 could be assumed to reflect an equilibrium level for those years based on negotiations between honey buyers and sellers. It presumably represented a fair or desirable price for all actors in the international market, especially for beekeepers.

However, since 2015, prices unexpectedly started to fall at an average rate of USD 201/tonne/year (Figure 2). This fall of honey prices in the international market can mainly be explained by the flooding of low-priced and low-quality products exported under the name of honey from some Eastern countries (García, 2016). This adulterated honey disrupts and distorts the normal supply/demand relationship.

The observed steady and dramatic collapse of honey prices defies the laws of economics in that, in a context where the demand for honey has increased, the cost of production of authentic honey has increased and the productivity per hive has decreased, the prices of honey to beekeepers should have

steadily and significantly risen. This did not happen, even though the prices at the retail level in the U.S. increased from ca. USD 14.60/KG in January 2015 to USD 17.15/KG in January 2019 (Phipps, 2020).

Estimation of the direct economic loss

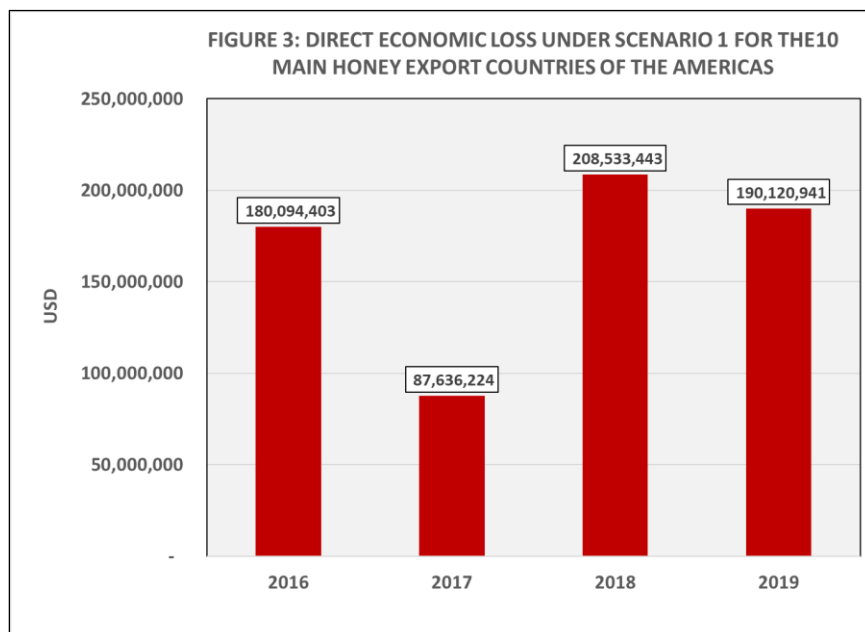
A first and necessary step to estimate the economic loss suffered by the honey exporting countries of the Americas is to approximate/project the price that honey should have had if adulteration had not reached the observed levels of prevalence in the market. In order to make such an appraisal, two hypothetical scenarios were conceived:

- Scenario 1: We worked on the assumption that the export of adulterated honey would have significantly stopped after 2014/2015 and, with steady and even increasing consumption, prices should have at least remained at values similar to 2014-2015. The economic loss for each year was calculated by multiplying the volume exported that year by the price difference compared to 2015. This is a minimal hypothesis indeed, since 2014-2015 price was already affected by the prevalence of adulterated honey in the market.
- Scenario 2: We assumed that the injection of adulterated product had significantly ceased in the international market after 2014 and, as consumption continued to increase, the prices would have maintained the same upward trend observed until 2014. For the calculation of the economic loss for each year, the 2005-2014 regression line was first calculated to estimate the trend of price increase due to a rising demand and a quite inelastic offer. The regression analysis showed an average annual price increase of USD 209 per tonne (Figure 4). To calculate the economic loss under Scenario 2 (Figure 5) the volume exported each year was multiplied by the price estimated by regression, (dotted line in Figure 4). This hypothetical scenario neither totally excludes the damage of adulterated honey since, as already mentioned, prices for 2014-2015 and for previous years were already affected by a significant volume of adulterated honey traded around the world. This second hypothesis is not as conservative as that of Scenario 1, and assumes sustained honey consumption even under increasing prices.

Results under Scenario 1

The calculated economic loss under Scenario 1 was immense given the large volumes exported by the main honey export countries of the Americas (Figure 3).

Each column in Figure 3 represents the money that the sector did not receive each year due to falling prices, mainly explained by the massive prevalence of adulterated honey. For example, for 2016 the estimated loss was USD 180,094,403. The total estimated direct economic loss under this Scenario for the beekeeping sectors of Argentina, Brazil, Canada, Mexico, Chile, Uruguay, Cuba, El Salvador, Guatemala and Nicaragua during the period 2016-2019 was USD 666,385,011.

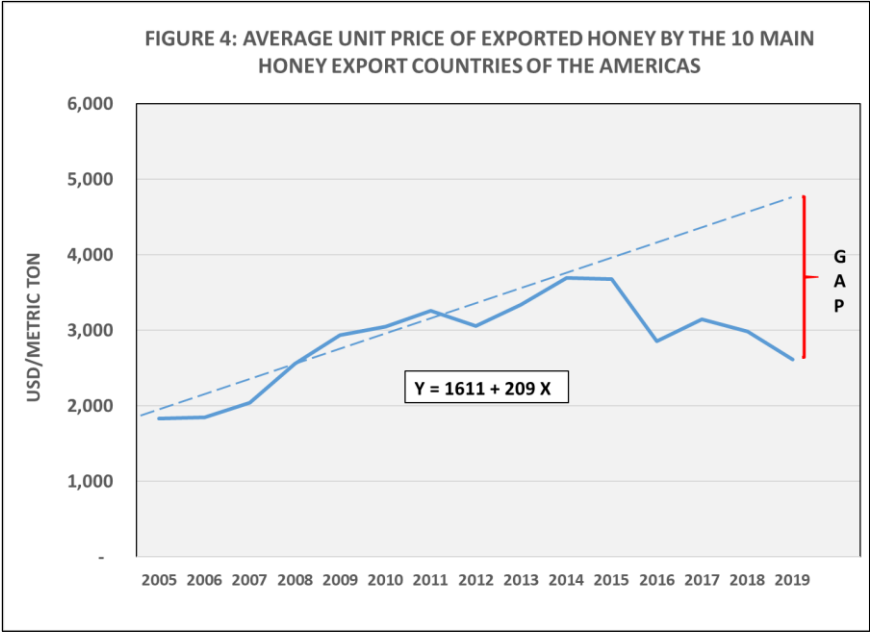


Argentina, the main honey export country in the region, suffered the major economic loss mainly due to the magnitude of its exported volume: about 65,000 tonnes of honey per year or, to be exact, 287,546 tonnes of honey during the period 2016-2019. The average FOB price per kilo of Argentine honey in 2015 was USD 3,588/tonne, while in 2019 the price was USD 2,245/tonne. The estimated total loss for Argentina during the period 2016-2019 under Scenario 1 was USD 357,935,220. That enormous volume of resources, not received by the beekeeping sector of the country, occurred without any logical cause like overproduction or decreased demand.

In parallel, and during the same period, Mexico lost about USD 123,212,000; Canada, USD 79,952,000; Uruguay, USD 30,751,000; Brazil, USD 26,678,398; Chile, USD 20,966,706; Cuba, USD 14,878,131; Guatemala, USD 6,142,854; El Salvador, USD 5,679,529; and Nicaragua, USD 188,205.

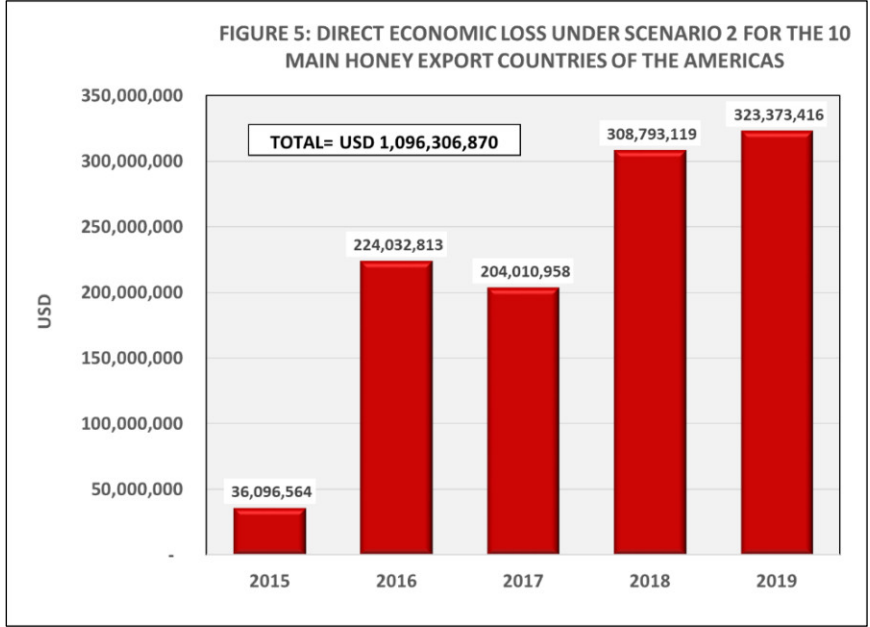
Results under Scenario 2

If the price trend observed during the period 2005–2014 had continued (which could have been expected under increasing demand and inelastic offer), the price for honey would have reached USD 4,700 per tonne by 2019, a difference of more than USD 2,000 per tonne with the observed price (Figure 4).



Data source: ITC - UNCOMTRADE

The estimated total loss under Scenario 2 for the 10 main honey export countries of the Americas was USD 1,096,306,870 during the period 2015-2019 (Figure 5). As mentioned above, the only factor that could have stopped that increase of prices would have been a drop in consumption but, in such a case, a new reasonable equilibrium price for honey would have been reached.



In either scenario the losses to the beekeeping community stand in contrast to the fact that the price of honey achieved by retailers and packers steadily increased.

Conclusions

According to the two hypothetical scenarios developed in this article, the direct economic loss for the major honey exporting countries of the Americas was between USD 666 million and USD 1.09 Billion during the period 2015-2019. The exact economic damage is obviously impossible to estimate, however, the results of either of these two hypothetical scenarios show results of an almost unimaginable magnitude, reflecting the greatest economic damage ever inflicted on the beekeeping sector of this part of the world.

It is widely agreed that when the prices of a primary product fall, the whole chain is affected. However, the biggest impact is usually suffered by the primary producers, who are economically less elastic than other links of the chain, since they do not have the opportunity to easily change their activities or run out their businesses and wait for a change in trend. In other words, the money that did not happen to enter through honey exports to the countries of the Americas, is money that, in a good part, did not reach the pocket of beekeepers. When the beekeepers' incomes increase, they normally reinvest them in their operations either by increasing the number of hives, or making improvements in their facilities, or buying better trucks, i.e. increasing or improving their production capacities. It is quite infrequent to find a beekeeper investing in bonds or financially speculating; in the best of cases, if incomes increase, they may take a nice vacation, improve their homes or change their trucks. The current trend towards bankruptcy in larger beekeeping operations and the detriment of local and smaller beekeepers is becoming each day more transparent.

The steep increase of exports of dubious quality honey from some Eastern countries caused multimillion-dollar losses to the honey exporting countries of the Americas. This is even more serious when we consider that consumers never enjoyed lower prices since retail prices in the major honey-consuming countries never fell (Phipps, 2020).

Official regulations of countries, blocs or regions are usually responsible for ensuring the quality and safety of imported products. These regulations sometimes fail to protect those who produce genuine food, so if there is no threat to a population's food safety, official agencies do not act or do so quite slowly.

It is well known that the main strategic value of beekeeping is not honey but pollination of both commercial and wild plant species. However, it is the price of honey that mainly powers the existence of beekeeping operations. Falling prices reduce the incentive to produce. Without economically sustainable beekeeping operations, bee populations would decrease, thus endangering crop pollination and plant biodiversity. Though the appreciation of the importance of bees to agriculture and global food

security was great 3-4 years ago, now it is much stronger and more comprehensive. The economic losses caused by honey adulteration have put into jeopardy hundreds of billions of dollars of global agricultural production. Governments should urgently formulate and implement plans for the allocation of more land for bees and to ensure the authenticity of honey.

Members of all beekeeping entities around the world should understand that honey adulteration endangers all beekeepers, not just those located in honey exporting countries. It is our duty as beekeepers to be the guardians of the purity and authenticity of bee products, not only for the benefit of our own industry but also to protect consumers, food security, and the biodiversity of the planet. Consumers are robbed of the natural health benefits and charm of authentic honey.

The purity and authenticity of much of the honey currently available in the market is under suspicion. However, unfortunately, much of the evidence confirming this problem has mainly come to us from private laboratories and companies. Many official laboratories do not use the most advanced and available tests yet.

In contrast, the European Union's efforts over the past few years (European Commission, 2016) and the recent news about the decision of U.S. Customs to acquire a Nuclear Magnetic Resonance equipment for the detection of imported adulterated honey (American Bee Journal Extra-April 21, 2020) constitute a breeze of promising clean air for producers of honey.

People have never been so conscious of either the vulnerability or value of bees as they are today. The international media is helping build a positive agenda, providing a good foundation for the future.

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